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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,536	11/20/2003	Hirai Shuji	245716US3	6890

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EXAMINER

CHEN, SOPHIA S

ART UNIT PAPER NUMBER

2852

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,536

Applicant(s)

SHUJI, HIRAI

Examiner

Sophia S. Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/20/03 & 2/3/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "5" has been used to designate both "an image apparatus" (page 5, line 4, etc and Figure 1) and "a transfer roller" (page 5, line 17 and Figures 1 and 5). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 16, 17, 18, 20, 21 (Figure 1), 27 (Figure 2), 9 (Figures 1 and 5), and 30 (Figure 7). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being

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amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "load driven by the agitating device" (claim 4), "notice device" (claims 15, 16, and 17), and "to a control center via a communication line" (claim 17) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:

- a. Page 9, line 1, "28A" should be "28a".
- b. Page 11, line 11, "VO" should be "VD".

Appropriate correction is required.

Claim Objections

5. Claims 1-17 are objected to because of the following informalities:

- a. Claim 1, line 5, "developing having" should be "developing device having".
- b. Claim 11, line 1, "the image forming conditions are" should be either

"image forming conditions are" or "the image forming condition is".

Appropriate correction is required.

Claim Rejections – 35 USC §102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 3, 6-9, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ichikawa (JP 06-130818 A; cited in Form PTO-1449).

Ichikawa discloses an image forming apparatus having a latent carrier 1, a charging device 7 configured to charge a surface of the latent carrier 1 (paragraph [0022]), an exposure device 3 configured to expose a surface of the latent carrier 1 for forming a latent image (paragraph [0020]), and a transfer device 10 provided to transfer a developer toner image on the latent carrier 1 to a recording medium (paragraph [0024] and Figure 2), comprising: a developing device 9, the developing device having a developer carrier 22, the developer carrier 22 configured to replenish the developer to the latent carrier 1 (paragraph [0028] and Figure 3); a pooling portion 21, the pooling portion 21 configured to pool a two-component developer (paragraph [0029]; toner and carrier), the two-component developer including: an agitating device 23, 24, 25, or 26, the agitating device 23, 24, 25, or 26 configured to agitate the two-component developer in the pool portion 21; and a first measurement device (magnetic permeability sensor) 30 and a second measurement device (magnetic permeability sensor) 31 configured to measure a developer characteristic, wherein the first and second measurement devices 30, 31 compare their respective outputs to measure a deterioration rate of the two-component developer (abstract; paragraphs [0032] and [0042]; Figures 13, 16, and 19).

Ichikawa further discloses the second measurement device 31 is a developer magnetic permeability sensor (paragraph [0032]); an image forming condition (a charging bias value of the charging device 7, an exposure power of the exposure device 3, or a developing bias value of the developing device 9) is configured to be changed according to a measured deterioration rate of the developer (paragraphs [0039], [0040], [0066], and [0079]; Figures 13, 16, and 19); and image forming conditions are

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configured to change to negate an affection of deteriorated developer (paragraphs [0039], [0040], [0066], and [0079]; Figures 13, 16, and 19).

Claim Rejections – 35 USC §103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa in view of Matsuzaki (JP 08-106211; cited in Form PTO-1449).

Ichikawa, as discussed above, differs from the instant claimed invention in not disclosing the first measurement device is a developer reflection intensity sensor.

Matsuzaki discloses an image forming apparatus comprising a latent carrier 4; a developer carrier 3; and a toner concentration sensor 16 being a developer reflection intensity sensor (paragraph [0042]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the reflection intensity type of toner concentration sensor as taught by Matsuzaki in place of the magnetic sensor 30 (first measurement device) of Ichikawa because of the same functionality for detecting the toner concentration.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa in view of Isobe et al. (US Pat. Pub. No. US 2003/0123889 A1)

Ichikawa, as discussed above, differs from the instant claimed invention in not disclosing the second measurement device measures a load driven by the agitating device.

Isobe et al. discloses an image forming apparatus comprising a latent carrier 7; a developer carrier 10a; and a measurement device 431 for measuring a load driven by an agitating device 430 (Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the measurement device measures the load driven by the agitating device as taught by Isobe et al. in place of the second measurement device 31 (magnetic sensor) of Ichikawa because of the same functionality for measuring the amount/deterioration of the toner.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa in view of Asanuma (JP 06-083179 A).

Ichikawa, as discussed above, differs from the instant claimed invention in not disclosing the second measurement device measures an electric resistance of the developer.

Asanuma discloses an image forming apparatus comprising a latent carrier 1; a developer carrier 42a; and a measurement device 44 for measuring an electric resistance (electric current) of the developer (abstract; paragraphs [0030] and [0031]; Figure 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the electric resistance sensor as taught by Asanuma in

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place of the second measurement device 31 (magnetic sensor) of Ichikawa because of the same functionality for measuring the deterioration of the developer (Asanuma; abstract).

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa in view of Aimoto et al. (US Pat. No. 5,310,423)

Ichikawa, as discussed above, differs from the instant claimed invention in not disclosing the image forming condition is a rotating speed of the developer carrier.

Aimoto et al. discloses an image forming apparatus comprising a latent carrier 1; a developer carrier 4; a toner density sensor 8; and a rotating speed of the developer carrier 4 being changed based on the output voltage of the toner density sensor 8 (column 12, lines 21-46; column 13, lines 41-49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the image forming condition (the rotating speed of the developer carrier) as taught by Aimoto et al. to the image forming conditions of Ichikawa to be capable of eliminating a wasteful time taken after terminating the charge of new developing powder (Aimoto et al.; column 2, lines 6-9).

13. Claims 12, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa in view of Aimoto (US Pat. No. 5,235,391).

Ichikawa, as discussed above, further discloses a new developer replenishing device 28 configured to provide new toner to the developing device 9 responsive to toner consumption (via the toner concentration sensor 30).

Ichikawa differs from the instant claimed invention in not disclosing the developer in the developing device is configured to replace developer according to a measured deterioration rate of the developer; a discharging device configured to discharge a deteriorated developer; and the new developer replenishing device is configured to provide the new developer to the developing device after discharging the deteriorated developer by the discharging device.

Aimoto discloses an image forming apparatus comprising a latent carrier 12; a developer carrier 21; a developer in the developing device 13 is configured to replace developer according to a measured deterioration rate of the developer (column 3, lines 39-53; column 4, lines 20-25); a discharging device 19 configured to discharge a deteriorated developer (column 3, lines 19-21); and the new developer replenishing device 15 is configured to provide the new developer to the developing device 13 after discharging the deteriorated developer by the discharging device 19 (column 4, lines 37-40 and Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the discharging device, the new developer replenishing device, and the associated mechanism as taught by Aimoto to the developing device of Ichikawa to be capable of keeping the density of the developing powder uniform so that the quality of the resulting image may be enhanced (Aimoto; column 2, lines 3-6).

14. Claims 15, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa in view of Isobe et al.

Ichikawa, as discussed above, differs from the instant claimed invention in not disclosing a notice device; the notice device being configured to show a notice on an operation panel; and the notice device is configured to transmit information to a control center via a communication line.

Isobe et al. discloses an image forming apparatus comprising a latent carrier 7; a developer carrier 10a; a notice device configured to notify the need to replace the developer in the developing device (paragraphs [0275], [0277], and [0279]); the notice device being configured to show a notice on an operation panel (paragraph [0275]); and the notice device is configured to transmit information to a control center via a communication line (paragraph [0275]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the notice device as taught by Isobe et al. to the image forming apparatus of Ichikawa to inform the user to replace the developer.

Other Prior Art

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Osaka et al. (US Pat. No. 4,538,897) discloses a developing device comprising a current sensor.

Kamitamari et al. (US Pat. No. 4,896,184) discloses a developing device comprising a pressure (or a magnetic) sensor.

Hatano et al. (US Pat. No. 5,619,312) discloses a developing device having a developer supply unit and a developer discharge section.

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Wada et al. (US Pat. No. 5,797,062) discloses a developing device comprising a current sensor.

Shoji et al. (US Pat. No. 6,125,243) discloses a developing device including a container for replenishing fresh toner and for replacing carrier deteriorated due to aging or a developer including such carrier.

Ito (US Pat. No. 6,892,036 B2) discloses a developing device having a load sensor.

Aimoto (JP 05-035162 A) discloses a developing device having a sensor for detecting the deterioration of the developer.

Ogata et al. (JP 10-026880 A) discloses a developing device having a sensor for detecting the deterioration of the developer.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sophia S. Chen whose telephone number is (571) 272-2133. The examiner can normally be reached on M-F (7:00-3:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on (571) 272-2136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sophia S. Chen
Primary Examiner
Art Unit 2852

Ssc
June 13, 2005